Effect of reduction rhinoplasty on nasal volume

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Abstract

Background:

Reduction rhinoplasty is one of the most common operations done to patients complaining from dorsal nasal humps. However some patients may complain from nasal obstruction following reduction rhinoplasty specially on using lateral osteotomies. The cause for nasal obstruction is mainly narrowing of the nasal valve area. Aim of the Work: To determine the effect of reduction rhinoplasty on the nasal volume using different methods, by acoustic rhinometry (AR) and CT scan studies and suggests a better surgical technique if reduction rhinoplasty causes postoperative nasal obstruction. Patients and Methods: Prospective study on 30 patients (16 males, 14 females with age ranging from 20-35 years and a mean age 27 years) with dorsal nasal humps and no nasal obstruction. Results: 3 patients (10%) only complained from nasal obstruction, 2 had bilateral nasal obstruction and 1 with unilateral nasal obstruction. All were relieved using postoperative local nasal steroids.

Conclusion:

1. AR and CT scan are reliable tests in assessment of the nasal valve angle and nasal volume pre- and postoperatively specially the anterior nasal cavity.
2. Reduction rhinoplasty does not significantly affect the nasal airflow or cause postoperative nasal obstruction.

Key words:

reduction rhinoplasty, nasal flow.

Review of Literature

Effect of reduction rhinoplasty on nasal air flow

Review of literature

Relevant anatomy of the nose

External nose

The nose is a complicated structure that can be subdivided into thirds and functional cosmetic parts. The anatomical thirds of the nose are best viewed from different points. The frontal, lateral, and basal views are required to assess the nasal structures.

The nasion region (upper third), contains the paired nasal bones. The nasal bones vary in length. They are about 2.5 cm long and become thinner as they extend caudally toward the rhinion ***(O'Neal RM and Bail RJ, 2010).***

The nasal bones are attached to the frontal bone superiorly, which corresponds topographically to the radix or root of the nose. The nasal bones articulate with the lacrimal bones superolaterally, and the nasomaxillary processes inferolaterally. Nasal bones cover the upper lateral cartilages inferiorly ***(Lessard ML and Daniel RK, 1985).***

The middle third of the nose contains the paired upper lateral cartilages (ULCs), also known as the cartilaginous vault. The ULCs fuse superiorly but are separated from the septum as they extend inferiorly ***(Hollingshead WH, 1982).*** Laterally they become rectangular. The ULCs do not rest on the piriform process, as was earlier thought, but end in an area named the external lateral triangle of the pyriform aperture ***(Johnson CM and Toriumi DM, 1990).***

This area also contains sesamoid cartilages that aid in respiration as pillows (Fig 1) ***(Bernstein L, 1975).***

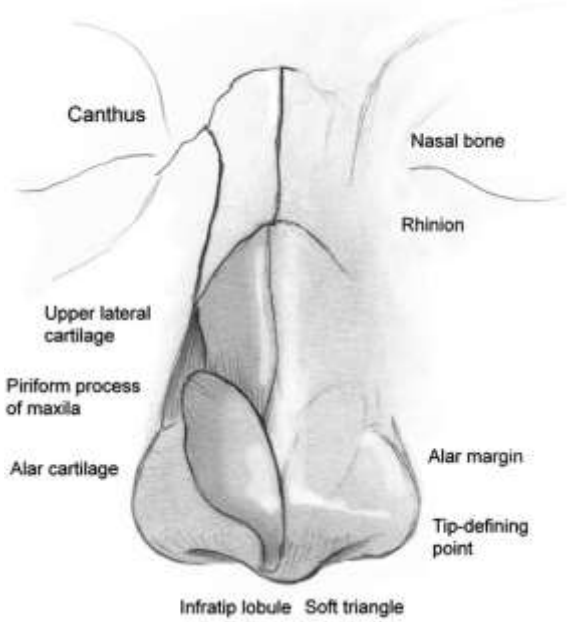

Figure 1: frontal view of the nose (quoted from Mark and Hany, 2012)

The lower third or lobule can be divided into 3 parts topographically: the tip, the supra and infra tips. These areas of the lobule are formed from the varied shape, size, and angles of the lower lateral cartilages (LLCs). The LLCs are now divided into 3 distinct regions: medial, middle, and lateral crura. From a lateral view, the lobule is defined by the tip or apex of the nose. The cephalic edge of the domal segment of the middle crus is responsible for the aesthetic point known as the pronasale. The supra tip is immediately cephalic to the pronasale. The infra tip is located between the pronasale and the base of the nostrils. The lower third of the nose has different thicknesses of fibro-fatty connective tissue. The thickness of that soft tissue envelope masks the defined lobular features. The infra tip area should have a gentle curve that slightly projects inferiorly to the alar margins (Figs. 1 and 2) ***(Schlosser RJ and Park SS, 1999).***